

Impact Assessment of Implementing the GHS

Study Summary

for
DG Enterprise and Industry
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London Economics & DTC

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STUDY SUMMARY

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Study Summary (Work Packages 1 and 2)

1. Aims of the Study

In December 2002, the Globally Harmonised System of Classification and Labelling of Chemicals (GHS) was agreed by the UN Committee of Experts on the Transport of Dangerous Goods and the Globally Harmonised System of Classification and Labelling of Chemicals in Geneva. The aim of the GHS is to bring together the major world classification and labelling (C&L) systems into one single new system, having three main elements:

- a globally harmonised classification system for chemical substances;
- a globally harmonised classification system for mixtures/preparations; and
- a globally harmonised system for hazard communication for workers, consumers and in transport (which includes labelling and safety data sheets (SDS)).

It is anticipated that the GHS will enhance protection of human health and the environment at the international level and provide a recognised framework for those countries without an existing system. For companies in the EU, this may have the benefit of facilitating the international trade in chemicals whose hazards have been properly assessed and identified on an international basis.

The aim of this study is to support the Commission in developing the information that it requires to prepare an impact assessment of its forthcoming proposals for introducing the GHS in the EU. The work required under the study has been divided into two work packages:

- **Work Package 1:** to provide empirical and factual evidence on the likely impacts (costs and benefits) of GHS implementation on chemical companies that have to classify and label substances and preparations/mixtures for EU and non-EU markets, based on questionnaire responses and interviews with relevant companies and industry associations. This work is to include examination of assumptions that the GHS is unlikely to deliver new health and environmental benefits; and
- **Work Package 2:** to provide an assessment of the global trade implications of GHS implementation, with an emphasis on the impacts on chemical exports from and imports to the EU. Quantitative estimates of the trade effects should be provided for a range of different scenarios based on well-founded assumptions and in conformance with best academic practice in such modelling.

The amount of information available to carry out the above analyses has been limited. This is due to the fact that most companies in the EU are currently focused on understanding the implications of REACH for their activities; they have not yet turned their attention to understanding the implications of the GHS for their activities. As a result, those responding to the questionnaires for Work Package 1 and national experts have been reluctant or are unable to attach quantitative figures to what they

believe might change under the GHS, given the uncertainty surrounding such outcomes. In addition, responses suggest that companies are also focusing on the short-term impacts of GHS implementation rather than also looking to the medium to longer-term benefits that may arise. This has affected not only the robustness of the findings of Work Package 1, but also those of Work Package 2 which has also relied on responses to the questionnaire. The modelling carried out for Work Package 2 has also been affected by the nature of the data available as measures of tariff and non-tariff barriers affecting trade flows of chemicals and related products.

2. The EU Chemicals Industry

The total value of production for the EU chemicals industry for 2005 is estimated at €86 billion, accounting for approximately 33% of €1,776 billion in world sales in 2005 (Cefic, 2005). The chemicals industry in general is characterised by a large number of small and medium sized enterprises (SMEs). The total number of companies operating in the EU according to Cefic (2005) is around 27,000 (excluding pharmaceuticals and agrochemicals); 95% of these are classified as SMEs (where this is defined as employing less than 250 staff).

Around 25% of EU sales are accounted for by extra-EU exports, with an analysis of the international trade in chemicals indicating that the EU is the largest market for chemicals, ahead of Asia (Japan, €186 billion; China & the Rest of Asia, €320 billion) and the United States (€115 billion).

The EU industry can be broken into several different market sectors. Of most relevance to this study are the following sectors:

- the detergents and cleaning products industry;
- paints, printing ink and artists' colours industry;
- the dyes and pigments industry supporting sectors such as the textile industry;
- the adhesives and sealants sectors;
- the cosmetics and perfumes sectors (in particular in relation to fragrances);
- fine and basic chemicals producers; and
- distributors trading in substances and mixtures.

3. The Current EU System

The current EU classification and labelling (C&L) system is implemented primarily through three Directives:

- the Dangerous Substances Directive (67/548/EEC);
- the Dangerous Preparations Directive (1999/45/EC); and
- the Safety Data Sheet Directive (91/55/EC as amended by 2001/58/EC).

The objectives of the current EU C&L system are to identify: physico-chemical hazards (explosive, oxidising and flammable properties); all toxicological properties of substances and preparations, which may constitute a risk during normal handling or use (effects on the health); and eco-toxicological hazards (acute or long-term toxicity to aquatic or non-aquatic ecosystems).

The current system sets out detailed requirements for how both substances and mixtures are classified, the preparation of safety data sheets to be sent to professional and industrial users and the manner in which their packaging is labelled. These existing systems are considered to provide a high level of protection for workers, consumers and the environment.

The classifications derived under the current system also underpin a range of other Directives (and implementing national legislation). Any changes to classification under the GHS could, therefore, have impacts on the way these Directives are applied to substances and preparations, with potentially significant impacts for business. This report does not cover any changes in such legislation, as the relevant Commission services have not yet decided how they will adapt existing legislation when the GHS is adopted.

4. The Requirements of the GHS

An assessment of the classification criteria set out in the GHS identifies three possible outcomes with regard to both substances and mixtures, taking into account both the core requirements and the options that are open to implementing authorities:

- **Higher Classification:** this occurs when the move from the EU system to the GHS involves some substances and preparations/mixtures moving to a higher than equivalent classification under the existing system. Consequently, hazard warning labelling and classifications will have to be revised upwards, with a potential negative impact on the markets for these chemicals.
- **Lower Classification:** this refers to cases where a substance or preparation/mixture moves down a hazard category under the GHS compared to the existing EU system. These impacts can broadly be categorised as potential advantages of the GHS as they could result in a lower classification, potentially important for industry in carrying out workplace risk assessments and applying exposure guidelines; and
- **New Classification:** across a range of end-points, the GHS introduces the option to adopt additional hazard categories for classification and labelling purposes (the so called optionalities). These categories relate to potential hazards and in some cases, thresholds previously above current testing requirements. Adoption of these additional categories is expected to result in significant impacts for industry and consumers as much of the information required is not yet tested for or recorded in

many standard testing regimes. Similarly, additional resources will be necessary to classify and label substances and mixtures against these new end-points.

Omitted from the above list is the fact that the same or equivalent classification may occur. In these cases, the impacts would be minimal and relate only to the need for manufacturers and suppliers to revise their SDS and labelling so as to comply with the GHS requirements.

5. Responses to the Questionnaire

Responses were collected from 14 companies and five trade associations (16 responses in total when taking into account national associations). Responses reported by the key sub-sectors can be summarised as follows.

- **Basic Chemicals:** this grouping focuses on those companies producing mainly substances for supply to other parts of the chemicals industry and other sectors; they may also produce mixtures as part of their overall portfolio. The costs of labelling and revisions to SDS are small due to the automation of IT and computer systems, the international sales base of producers and the bulk nature in which the products are transported (requiring minimal labelling by volume manufactured). They did not expect significant adverse impacts resulting from changes in classification under the GHS, with only 10% of substances predicted as being affected by changes in classification criteria. The preference of this group was for a GHS transition concurrent with REACH. Positive trade impacts from the GHS were expected to be small and to arise only in the medium to longer-term. This group also raised concern over how the C&L of complex substances would be dealt with under the GHS, compared to the current system.
- **Consumer Products:** this grouping covers household and personal care products, with companies largely producing mixtures, with numbers ranging as high as 50,000 per company. The group's exposure to GHS and consequent costs are determined by the large amount of packaging and labelling used, the automation of computer systems for C&L and the proximity to customers at the bottom of supply chains. Changing labels on stocks, disposing of labels, reformulation and stock loss were all identified as potential impacts in this sector should there be an inadequate period allowed for stock replacement/withdrawal. Classification related impacts due to changes in criteria and the calculation method for mixtures were expected to be severe; adoption of the optional new Cat. 5 classifications was a particular concern as this is expected to result in the labelling of significant numbers of consumer end products. Transition periods that allow greater time for mixtures classification were generally preferred. Shorter periods could have considerable adverse impacts on SMEs and resources in general. Trade impacts were thought to be small, given that markets tend to be EU- or nationally-based (although one company indicated that they export a significant proportion of their production).

- **Non-consumer Products:** this group covers paints, pigments, dyes and inks and produces the largest number of products as a sector and by company on average, compared to the rest of the EU chemicals industry. SMEs and multinationals are both prevalent, as are mixtures and substances. Specialisation and skills within the EU make it one of the largest export sectors. Companies within this sector expect the costs to be high due to the amount of packaging and labelling required for often small volumes of products, combined with the large number of product lines and SMEs involved in this sector. A mixed view emerges from the responses with regard to the impacts of changes in classification criteria and the mixtures calculation method. Some minor benefits of harmonisation were also identified.
- **Traders/Distributors:** this group deals in both substances and mixtures, usually importing products for the EU market but also exporting to companies outside the EU. Costs are expected to arise in relation to both labelling and preparing and distributing revised SDS. These companies preferred a short transition period as they believed that they can implement most of the GHS measures within the first couple of years. As business is conducted globally, a worldwide ‘big bang’ would benefit the sector and, as such, respondents indicated that the GHS could yield some trade benefits (although some indicated that any such benefits would be small given that the level of effort that they put into monitoring and complying with other countries requirements would not necessarily change significantly with the GHS).

6. The Analysis for Work Package 1

6.1 The Analysis Framework

The consequences of the GHS implementation cannot be assessed without taking into account the requirements that will be introduced by the REACH Regulation. In particular, it has been important to take into account the series of duties that REACH places on manufacturers and importers of substances and preparations (mixtures). In the context of the GHS, the most relevant of these duties include:

- the registration of substances including the provision of a registration dossier, which involves the classification and labelling of substances as necessary; in case of the substances already placed on the market, the registration has different deadlines depending on volume ;
- duties on the communication of information down (and up) the supply chain for substances and preparations; in particular, the requirements concerning the preparation of safety data sheets and the supply of these to downstream users;
- provisions concerning the establishment of a classification and labelling inventory at the Community level for all registered substances and all substances which are classified as dangerous and placed on the market; and
- notification to the C&L Inventory three years after entry into force of REACH.

These provisions have the effect of potentially reducing the degree to which the GHS will require classification and labelling work specific to its introduction, as opposed to such work also being tied into implementation of REACH and, therefore, not reflecting an additional cost.

Based on a comparison of what REACH is expected to deliver and what will be required under the GHS, it has been concluded that the costs arising from implementation of the GHS may relate to direct and indirect impacts. Direct impacts are the changes in costs stemming from the need to undertake C&L activities specific to the GHS for both substances and mixtures, where this may result in the need to invest in new IT and staff training, as well as any additional classification work, revisions of SDS, redistribution of SDS and labelling. Indirect impacts are the changes in costs (for example, demands for product reformulation) that will arise due to retailers or customer responses to changes in classification under GHS; and impacts associated with the more rapid adoption of GHS in other countries. It should be stressed that not all of these impacts are measurable (see also the next section).

Estimation of the direct impacts has taken into account the potential for the GHS to result in higher classifications, lower classifications or new classifications of both substances and mixtures. Estimates have also been developed for adoption of the core GHS classifications only or the core plus optional hazard classifications.

The modelling underlying the cost estimation relies on a range of data sources, and assumptions based on these. In general, the approach has been to adopt conservative assumptions so as to err more on the side of over- versus under-estimation. Key data sources include those developed to assist in predicting the impacts of the REACH Regulation; data held by the European Chemicals Bureau; and analyses produced by various sources on the impacts of GHS adoption. A spreadsheet based model was then developed to bring the various data together. In some cases, this included the development of new sub-models, for example, a Monte Carlo analysis based model to predict the number of mixtures that would change classification when moving from the EU to the GHS systems.

6.2. The Work Package 1 Scenarios

The questionnaire used to elicit information from companies and associations asked respondents to indicate their preferences for different transition periods for the GHS implementation. This included transition periods based on the REACH phase-in period, which is the timeline for the registration of substances, extending beyond the REACH registration timeline or shorter than the timeline allowed for under REACH. The responses indicated that preferences vary greatly from a long period to a short period, depending on the nature of a company's activities.

After discussions with the responsible Commission officials, it was decided that Work Package 1 would consider three scenarios in detail. A fourth scenario based on an eleven year transition period for substances (in line with the timeline for the registration of substances under REACH) followed by a further six years for mixtures

was considered and excluded for economic, legal and political reasons.

The economic argument against such a long transition period relates to the need to run and maintain dual C&L systems for a lengthy period of time. Discussions with one of the main EU C&L software manufacturers (Safeware, pers comm., 2006) suggested that if the EU system was to be maintained over a lengthy transition period, requiring on-going updating after GHS is introduced, then this would be likely to present major problems. Not only would it cost users a lot to continually review products in response to up-dates of two C&L systems, but more importantly the costs associated with the confusion that this would cause are inestimable. The only practicable way to proceed would be to move to the GHS system over a reasonable transition period and build in the capability to produce data sheets, etc. according to both systems and read across between the two.

A lengthy transition period would also be likely to increase confusion for industrial and professional users and consumers. This is due to the differences in the timing of when substances in different tonnage bands would have to meet the GHS requirements. Adopting the same assumptions as for the REACH BIA, most low volume substances would not have a GHS C&L until towards the end of the 11 years. In addition, if mixture manufacturers want to minimise costs, they will not undertake the C&L of their mixtures until after the end of year 11. Thus, until the end of year 17, this scenario cannot guarantee to result in the consistent provision of information across both substances and mixtures, and does not adhere to 'good regulation' requirements for legal certainty. As a result, the level of effort that Competent Authorities would have to put into enforcing the GHS would be higher, particularly in relation to mixtures.

The long transition period may also result in an uneven playing field within the EU chemicals markets, as some customers (i.e. retailers) may demand the earlier adoption of the GHS by their mixture manufacturers than required by the GHS Regulation; similarly, those companies that export substances and mixtures will be incurring the costs of the GHS in very different timeframes than those EU companies that do not. This could give rise to inequities within the EU market itself. It is also expected to result in trade with the EU being less attractive for those countries that have moved to the GHS more quickly, negating some of the overall trade benefits of adopting the GHS (see also Working Package 2 which highlights the significant losses in trade that are predicted to result under such an extended transition time scenario).

In addition, given the political and technical involvement of Member States and the Commission, EU trade associations (including Cefic, CEPE, AISE, EIGA, Concawe, Eurometaux, etc.), and EU companies in the various UN meetings, adoption of such a long time period would result in a lack of political credibility. Adopting a 17 year period would put Member States and the Commission in a difficult position in terms of further negotiating the technical detail of the GHS. It is also likely to reduce the overall credibility of the GHS, at least in the short term, which could result in its adoption becoming fragmented globally. Such fragmentation could also have significant costs to EU chemical companies and the EU more generally, increasing the

costs of international trade and possibly reducing the attractiveness of trade with the EU vis-à-vis other countries (see also Working Package 2 which examines this type of scenario).

Given the above considerations, it was decided to predict the cost implications of three different scenarios for the timing of GHS implementation. These scenarios were developed so as to link with REACH registration or C&L notification dates for substances, and to provide a long enough transition period for mixtures so as to ensure the workability of the move to the GHS. In general, it is assumed that mixture manufacturers will require a longer transition period than substance manufacturers due to the increased complexity and length of the mixture supply chain (e.g. there may be fourth or higher level mixtures), the reduced (or more periodic) frequency of supply and the longer retention time of mixtures by both professional users and on consumer shelves.

The three scenarios can be summarised as follows (with these all assessed against a baseline of the EU not adopting the GHS):

- **Scenario 1:** this scenario has the greatest overlap with registration obligations under REACH, allowing six years for application of GHS C&L to substances. A further five years is then allowed for the GHS C&L of mixtures, with this corresponding to a total transition period of 11 years;
- **Scenario 2:** this scenario takes the requirements under REACH to notify the Agency of the C&L of substances for inclusion in the Classification and Labelling Inventory as its basis for setting the transition period for substances. Such notification must be made within three years of the Regulation coming into force. A further two years is then allowed for application of the GHS to mixtures. The total transition period is therefore five years; and
- **Scenario 3:** this scenario also assumes a transition period of three years for substances based on the same reasoning as for Scenario 2, but allows a further five years for the application of the GHS to mixtures. The total transition period is therefore eight years.

6.3 The Estimated Costs of GHS Implementation

Table 1 presents the quantifiable costs as estimated in Work Package 1 of the EU adopting the core GHS requirements for each of the three scenarios with and without IT costs. It should be stressed that the costs related to workability impacts such as those mentioned in the previous section are not included in the cost figures, as it is not possible to properly quantify these impacts. These workability costs are expected to be higher the longer the transition period is. The cost picture of Table 1 is therefore only a partial one.

Table 1: Present Value of the Quantifiable Costs of Core GHS Requirements by Scenario (discounted at 4% over Scenario time horizon)				
	Substances	Mixtures	Total	
			Excluding IT	Including IT
Scenario 1	€31,927,760	€116,610,420	€211,120,300	€276,259,910
Scenario 2	€39,743,250	€211,449,960	€318,797,900	€391,241,360
Scenario 3	€39,743,240	€162,532,470	€269,879,590	€342,323,870

As can be seen from Table 1, the total predicted costs for each of the scenarios are (discounted at 4% over each scenario time horizon):

- **Scenario 1** (6 years for substances and a further 5 for mixtures): €276 million (€111 million excluding IT costs) ;
- **Scenario 2** (3 years for substances and a further 2 years for mixtures): €391 million (€319 million excluding IT costs); and
- **Scenario 3** (3 years for substances and a further 5 years for mixtures): €342 million (€270 million excluding IT costs).

As expected, Scenario 1 is the scenario with the lowest quantified implementation costs as it allows companies to maximise the degree to which GHS requirements are undertaken at the same time as substances are registered under REACH. This also minimises the degree to which mixtures may need to be re-classified due to new information coming available from REACH. In contrast, Scenario 2 is predicted to give rise to the highest costs due to it requiring the greatest level of GHS C&L prior to REACH delivering new information. In all cases where mixtures are reclassified before the completion of REACH registrations, the costs of C&L administrative work to mixture manufacturers and distributors far outweigh those to substance manufacturers and distributors. As would be expected, Scenario 3 falls in between Scenarios 1 and 2.

It is important to note the large share of total costs comprised by the costs associated with new IT systems and the one-off training of staff. These account for €65 million and €72 million respectively for Scenario 1 and then Scenarios 2 and 3 (which have the same IT and training costs).

A key concern in the adoption of new legislation such as the GHS is the share of costs that will fall on SMEs as opposed to larger companies. Given that there is a lack of information on the number of substances and mixtures that are produced/traded by SMEs compared to larger companies, apportioning the above costs across these two types of companies is difficult. For the purposes of this assessment, we have assumed that 75% of all substances (i.e. of the 29,342) and mixtures (i.e. of the 2 million) are produced by large companies, with SMEs only producing 25% of the total numbers. Based on these highly uncertain assumptions, SMEs' share of the administrative costs of implementing the GHS vary from 13% to 16% across the three scenarios. However, the picture changes to a degree when the costs of new or modified IT systems and training are also considered. Because 95% of companies are SMEs, they will bear the majority of these costs.

The additional costs associated with adoption of the optional new classification criteria under the GHS (i.e. the Cat 5 criteria) are estimated at between €358 million (Scenario 1) and €339 million (Scenario 2). This corresponds to additional costs compared to the total (direct) costs of the introduction of the GHS of between 30% and 38%. Not included in these increases are the additional costs of testing to the new criteria.

6.4 The Expected Benefits and Cost Savings

The total value of production for the EU chemicals industry for 2005 is estimated at €86 billion, accounting for approximately 33% of €1,776 billion in world sales in 2005 (Cefic, 2005). Around 25% of EU sales are accounted for by extra-EU exports, with an analysis of the international trade in chemicals indicating that the EU is the largest market for chemicals, ahead of Asia and the United States. The EU has a large trade surplus in chemicals, estimated at over €50 billion based on Eurostat data.

The UN notes that there should be significant benefits for companies involved in the international trade in chemicals, based on consultation with the regulatory agencies of individual countries, industry representatives and experts from chemical companies. These benefits are expected to arise post-implementation and to include (Sullivan, 2006):

- reduced potential for legal liability claims due to inconsistent hazard data being provided on SDSs and labels;
- an improved corporate image and credibility with both customers and the public more generally;
- reduced costs in complying with global hazard communication regulations, where this includes: a reduced need for testing against multiple classification systems; a reduced need for evaluation against multiple classification systems; and a better use of expert resources;
- greater harmonisation of domestic classification and communication systems in relation to transport, worker and consumer safety; and
- the standardised translation of hazard information.

The above listed benefits to companies participating in international trade are expected to accrue to companies within all countries that implement the GHS, not only to those with no current system. The responses of companies to this study ranged from those that did identify the potential for savings to be realised (in relation to either their own import or export activities) to those that did not anticipate significant benefits. However, many of these responses failed to recognise the increase in costs that could arise should the rest of the world move to the GHS but the EU did not. There are two other potential benefits that could be lost should the EU not adopt the GHS:

- the creation of a more level playing field in international trade for companies, by reducing the need for expertise on differences in C&L systems worldwide; a

reduction of these overhead costs related to international trade seems to be of particular relevance for SMEs; and

- larger and better access to the global market for chemicals and, thus, a wider choice for EU companies in sourcing the chemicals inputs required for EU production processes; this may benefit not only producers of mixtures but also downstream users of substances and mixtures and, thus, consumers.

The potential savings in trade related costs that were highlighted by different companies for this study related to the expenditure that they incurred from the non-harmonisation of C&L requirements; this ranged from €400 up to €80,000 per country. At an annual level, the lack of harmonisation for one company was associated with costs of around €100,000 for just one of the countries it exported to and equivalent to one person year for another company and country combination. Such costs related to both exports (monitoring, understanding and complying with C&L requirements) and imports (correcting and adding to data supplied by importers so that it meets EU requirements for substances placed on the market).

Unfortunately, due to the varying responses from the interviews, it has not been possible to fully quantify the benefits of the GHS in terms of reduced trade related costs due to globally harmonised C&L requirements. As a result, the approach taken here has been to calculate what the total savings in C&L costs would have to be per annum and per company involved in international trade for the benefits of harmonisation to equal the costs to the EU as a whole; i.e. for there to be a breakeven outcome between the costs of GHS introduction and the savings stemming from this to EU companies. The results are presented in Table 2 in terms of the required reduction (or savings) in the C&L costs faced by EU importers and exporters and the equivalent annual value (EAV) of this required savings in costs (calculated over 30 years using a discount rate of 4%).

	Total Savings per Company (Present Value)	Annualised Savings per Company (EAV over 30 years @ 4%)	Annualised Savings per Company spread across 7 countries (EAV over 30 years @ 4%)	Annualised Savings per Company spread across 15 countries (EAV over 30 years @ 4%)
Scenario 1	€40,626	€2,348	€335	€157
Scenario 2	€57,535	€3,326	€475	€222
Scenario 3	€50,342	€2,910	€416	€194

Notes: EAV stands for equivalent annual value

The savings in C&L costs to importers and exporters only have to be small for the proposals to be justified in cost-benefit terms (i.e. for a breakeven outcome to occur). The total annual savings in C&L costs per trading company that would have to be realised vary from around €2,350 to €3,330. These equate to savings of just a few person-days per company and would appear to be far below the savings such

companies are likely to realise as inferred from the responses received for this study.

7. The Trade Analysis for Work Package 2

7.1 The Analysis Framework

The general objective of Work Package 2 was to gather empirical evidence on the likely trade impacts of GHS implementation. The emphasis is therefore on the chemicals exports from and imports into the EU area. The methodology employed for this work has three main components: estimation of an empirical relation between trade flows and trade barriers; estimation of the change in the level of relevant barriers resulting from GHS implementation; and estimation of the total impact taking into account the two above.

The first step was to devise and empirically estimate a model of the relevant trade flows as a function of a number of variables, including those that represent measures of trade barriers, such as labelling requirements. A key challenge to this work arose from the high level of heterogeneity in the very large underlying dataset. The final model used in the study, belonging to the class of “gravity equation” models, has been estimated with a Tobit estimation procedure with instrumental variables (IV). This estimation procedure was adopted to account for the presence of zero trade flows (for some products and for some country pairs) and the fact that there is also a greater likelihood of finding high barriers to trade in relation to trade flows that are large. The elasticity of trade flows with respect to the level of non-tariff barriers (NTBs) is estimated at around -0.02 with a 95% confidence interval from -0.01 to -0.04.

The second component of the work was to predict the impact of GHS implementation on the size of the barriers affecting trade flows in and out of the EU area. This component was to rely heavily on the responses to the questionnaires sent out to chemicals companies and trade associations as part of Work Package 1. Unfortunately, most respondents were unable to answer questions concerning trade related impacts and the current level of NTBs that they face. As a result, for these aspects the study has had to rely on the responses of only a few of the companies contacted, which adds to the uncertainty of the estimates.

The third and last component combined the results of the two previous components to reach estimated ranges for the trade impact of a global GHS implementation. The numerical results are summarised below. Ranges for the 95% confidence interval can be constructed from the point estimates given below. The range includes 50% below to 50% above the point estimate.

7.2 The Work Package 2 Scenarios

The scenarios considered in Work Package 2 focus on the timing of the GHS implementation in the EU as compared with that elsewhere in the world, in particular to differences in the respective transition periods which give rise to temporary reversals of trade effects. The baseline adopted in Work Package 2 is consistent with the one in Work Package 1, assuming: that the GHS is implemented by non-EU countries; that the transition period adopted by non-EU countries is 3 years for substances and 5 years for mixtures; and that EU C&L and SDS are no longer accepted by non-EU countries, with GHS-based information required.

The four scenarios examined in this part of the study were:

(1) “GHS global with EU lagging behind”

- The GHS is globally implemented;
- The transition period for non-EU countries is 3 years for substances and 5 years for mixtures; and
- The transition period for the EU is 11 years for substances and 6 years for mixtures, lagging behind the rest of the world.

(2) “GHS global and simultaneous”

- The GHS is globally implemented; and
- The transition period for non-EU countries and the EU is 3 years for substances and 5 years for mixtures. (Note that the 3 year period in the EU corresponds to the timing for notification of the C&L of substances to the REACH Inventory).

(3) “GHS global with EU delay for partial REACH implementation”

- The GHS is globally implemented;
- The transition period for non-EU countries is 3 years for substances and 5 years for mixtures; and
- The transition period for the EU is 6 years for substances and 5 years for mixtures, with this linked to the first two tranches of substance registration under REACH.

(4) “Fragmented Global C&L” or “worst case scenario”

- The GHS is not implemented;
- All countries/trade blocks fall back to national C&L systems (either one already in place or newly created where none currently exists); and
- EU C&L not assumed to be automatically accepted.

7.3 The Estimated Change in Trade Flows

In order to assess the impact of the different scenarios on trade costs and trade flows, the analysis was separated between imports and exports. From the analysis we conclude that the impact on chemicals trade flows into and out of the EU that can be expected to result from the different possible scenarios of GHS adoption/non-adoption are summarised by:

- **Scenario 1 (GHS global with EU lagging behind):** the lengthy delay to the adoption of GHS (at 11+6 years) results in a loss of roughly €224 million for exports and €184 million for imports.
- **Scenario 2 (GHS global and simultaneous):** there are no significant trade impacts compared to the current situation under this scenario, as the EU position vis-à-vis its trading partners is not affected. Note that due to the uncertainty of the statistical estimates, this conclusion would also effectively apply for EU transition periods which are a bit shorter or longer as compared to the one in the non-EU countries (as for example a 3+2 transition period).
- **Scenario 3 (GHS global with EU delay for partial REACH implementation):** a less delayed adoption of GHS (at 6+5 years) results in a loss of roughly €113 million for exports and €74 million for imports.
- **Scenario 4 (Fragmented global C&L or worst case scenario):** non-adoption of GHS results in a loss of roughly €504 million for exports and €420 million for imports.